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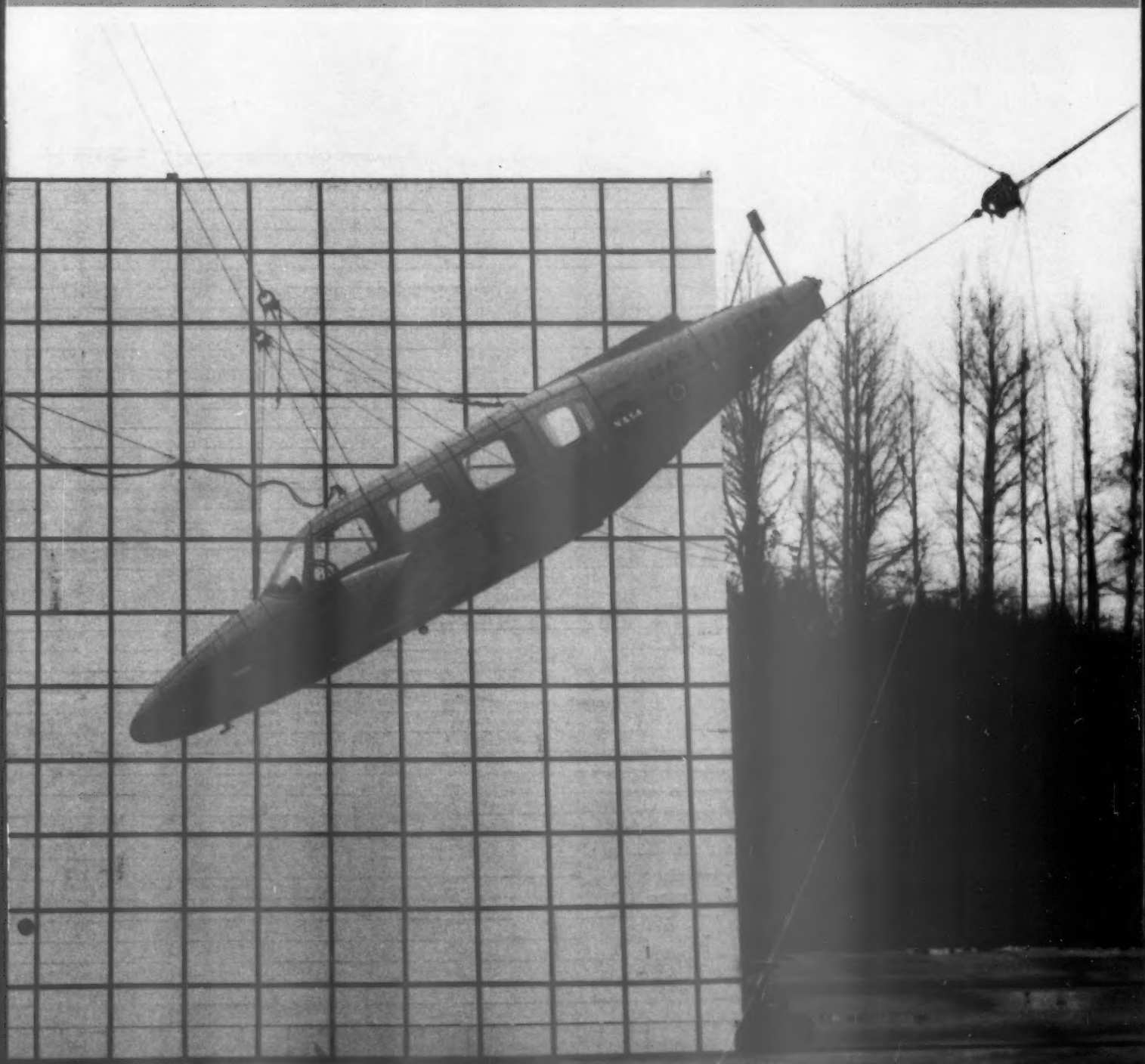
MAY 1974



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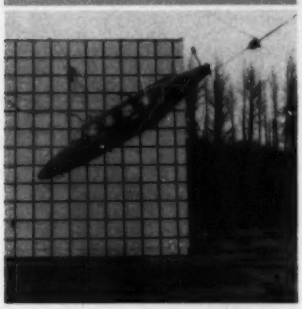

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Built-in Survivability.
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FAA AVIATION NEWS

DEPARTMENT OF TRANSPORTATION/FEDERAL AVIATION ADMINISTRATION VOL. 13, No. 1

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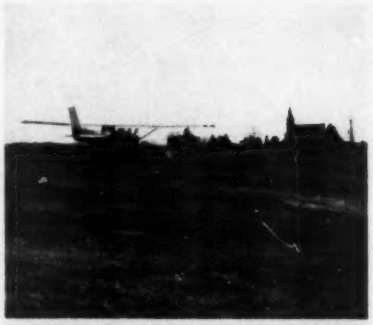

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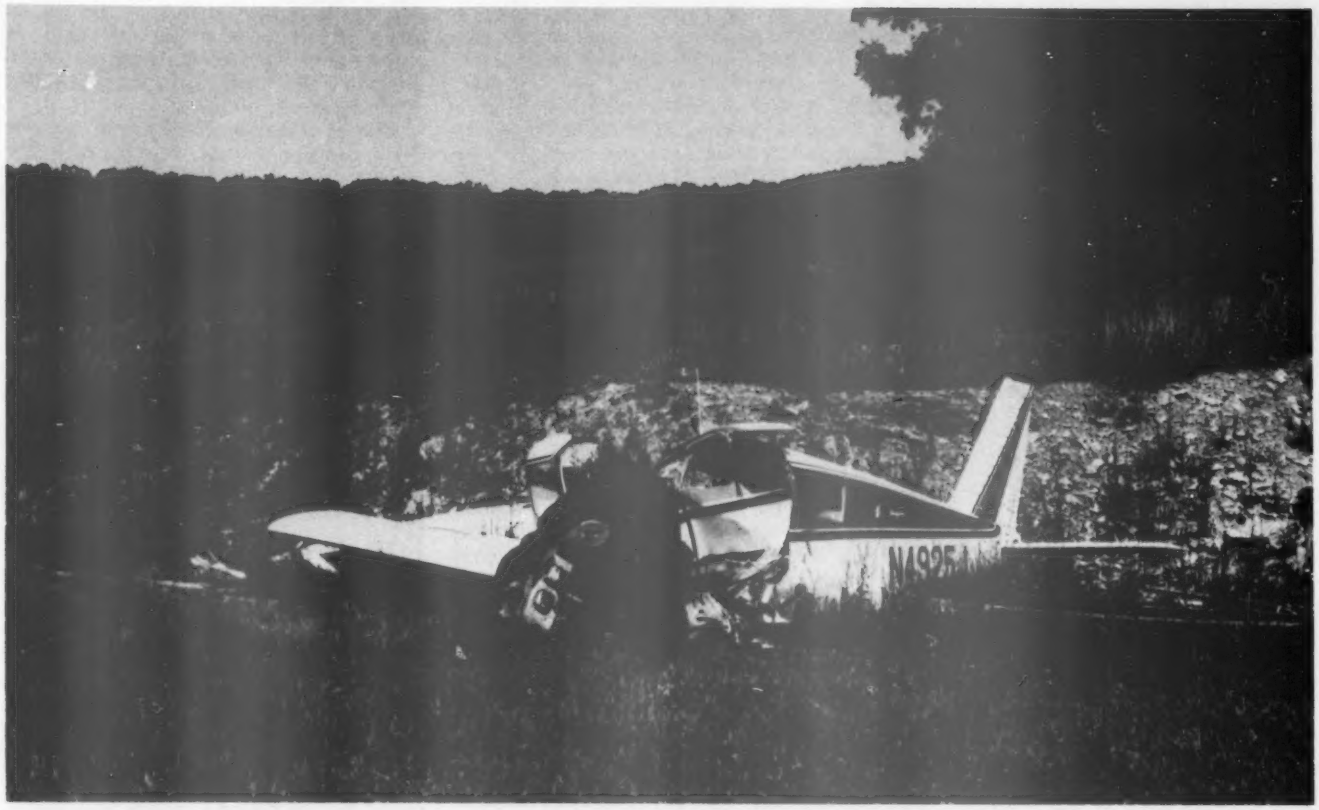


Crashworthiness

Is Next To Airworthiness

The ground is coming up at you at an unbelievably rapid rate. The nightmare of all pilots is actually about to happen to you—a crash landing. It matters little what the cause is—there are dozens of reasons why an aircraft can quit flying. The point is, are you going to survive the crash—and in what condition?

The most recent statistics compiled by the National Transportation Safety Board indicate that the chances of someone on board failing to survive the crash are about one in six. Out of every 100 general aviation crashes in 1972, 16 resulted in fatal injuries to one or more occupants. (There were 4,228 total accidents, and 683 were fatal.)

The figures also showed that one out of every 13 crashes produced serious injuries; one out of eight, minor injuries; and two out of three resulted in no injuries at all. In recent years the proportion of fatal accidents out of the total has increased somewhat, while total accidents have declined. In 1968 the ratio of fatal to total accidents was one to seven (692 fatal accidents out of 4,968 total accidents).

With many of us, the spectre of a post-impact fire is associated with fatal accidents. Is fire the giant killer of general aviation? No. It is true that if the airplane burns after crashing, your chances of survival diminish considerably. However, an average of less than ten percent of general aviation crashes result in fire. The remaining accidents may be divided into two categories: non-survivable, and potentially survivable.

A survivable accident is one in which the impact upon the aircraft and the occupants was not severe enough to necessarily cause death. In such accidents failure to survive may be attributed to failure of the victims to utilize the most effective restraining devices available. This means, in most cases, that a shoulder harness was not used in conjunction with the seatbelt; or possibly that the belt or harness was incorrectly fastened.

The seatbelt is the time-honored aircraft restraining device, and there is no doubt that it has saved many a pilot from falling out of his airplane or from striking his head against the ceiling in turbulence. Nevertheless, under certain conditions of impact, such as a forward crash, the seatbelt (used without the shoulder harness) may not protect a very vulnerable portion of the human anatomy—namely, the head. With sudden deceleration, when the occupant is restrained at the waist, his upper body can jackknife forward so that he may receive a fatal blow as his head strikes the windscreen, instrument panel, wheel, ashtray, etc. This can happen as a result of sudden braking on the ground, when no actual crash has occurred. Non-pilot passengers and small children are especially vulnerable, as they may be unaware of the need for emergency action.

Numerous studies of general aviation accidents—including field studies using dummy occupants—have demonstrated the vulner-

ability of the occupant who does not use a shoulder harness. The latest published FAA study on this subject, "General Aviation Structures Responsible for Trauma in Crash Decelerations," was directed by Dr. John Swearingen of the Civil Aeromedical Institute, FAA Aeronautical Center, Oklahoma City, Okla. Dr. Swearingen examined in detail 13 fatal or serious accidents in which the airplanes crashed in a forward direction and reported that ". . . all the occupants would have survived . . . if they had been properly restrained with shoulder harness and seatbelts." Instead, ten persons died, and 21 others received serious injuries. The investigators believed that had the accident victims been properly equipped, not only would all on board have survived, but they could have walked away from the crash.

One of those fatal accidents involved a light single-engine aircraft with a pilot and a passenger. The airplane, a 1959 model, was starting to fly out over a lake when it hooked its vertical stabilizer on telephone wires, and dived toward the water. The two occupants were both wearing seatbelts—but not shoulder harnesses. On impact with the water they both jackknifed forward over their seat belts and both suffered the same type of fatal injuries. The pilot's head struck the top edge of a ⅛ inch thick aluminum plate which covered the front of the instrument panel. That one knife-like wound was the only mark on his body, but it was fatal. His passenger suffered a similar fate.

The cabin had remained intact after ditching, and if the occupants had been wearing shoulder harnesses or if the sharp edge had not been within striking distance of their heads, the two otherwise uninjured men would probably have been able to scramble out of their airplane before it sank. It appeared to be a survivable accident.

Obviously there are many accidents which are simply not survivable—when, for example, the airplane strikes the ground at exceedingly high speeds or in an extremely severe attitude, or when the protective cabin structure is demolished on impact, or when there is a collision with some heavy structure, as a building. There is a limit to the impact force a body can tolerate. But there are many accidents in which the force of impact *is* tolerable for the human body and when the cabin-cockpit structure remains intact. When deaths occur in these accidents they are doubly tragic because they are avoidable.

Concern for such fatalities has led to a relatively new concept in general aviation safety: "crashworthiness." In earlier days of general aviation the emphasis was on "airworthiness," and the main concern was progress in the design and handling characteristics of the airplane as a flying machine. An old saying among pilots was that "light aircraft are made for flying and not for crashing." In their efforts to reduce the weight of the structure in proportion to thrust and lift, early airplane designers gave little thought to the survivability of the pilot in the event of a crash.

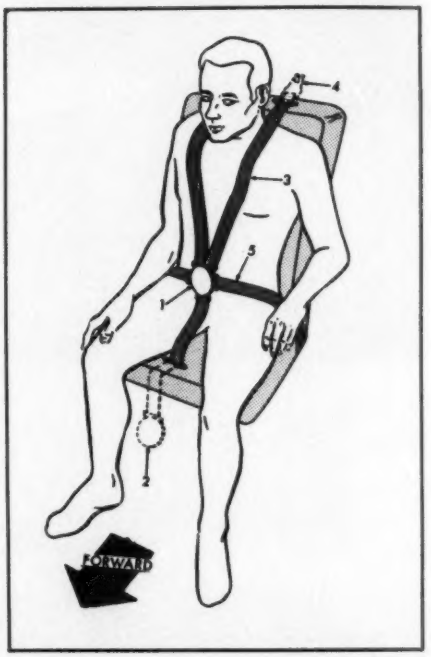
However, in recent years FAA's Flight Standards Service, the National Transportation Safety Board, and consumer advocates have been urging manufacturers to become much more crashworthiness conscious, and to improve the accident survivability aspects of the airplanes they produce. The question is, since we continue to average more than 4,000 general aviation crashes a year, can we, by regulation concerning design, develop aircraft more capable of withstanding ground impact and protecting the pilot from injury?

Delethalizing the Cabin

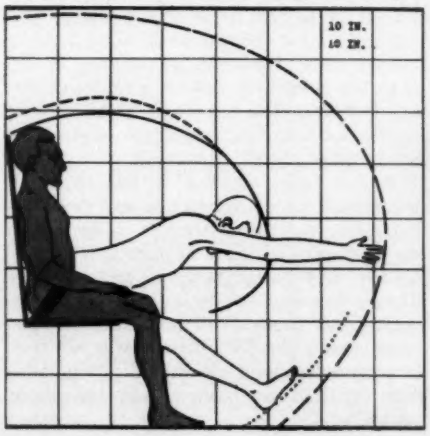
Crashworthiness proponents seek an improved design of the aircraft so that during a crash the cabin remains intact; the airframe is fitted with enough crushable material ahead of the pilot to reduce the energy of the crash; and the interior of the cabin is free of protruding objects or sharp surfaces which could injure the pilot upon crash impact. Since occupants of the cabin are frequently killed by the so-called "second collision" which occurs after initial impact, when they bounce around the cabin, crashworthiness also depends in part on educating or requiring pilots and passengers to wear not only a seatbelt but a shoulder harness as well.

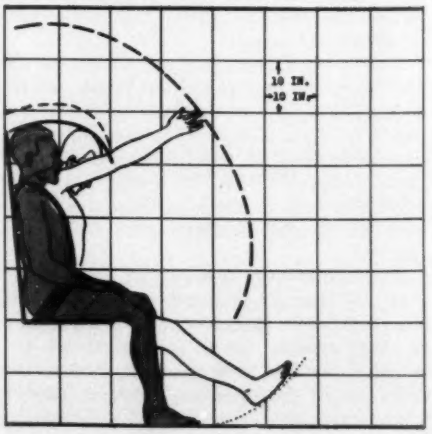
A concerted effort has been made to "delethalize the cabin"—and that phrase rather graphically indicates the nature of the problem. Safety investigators have pin-pointed certain cabin features which have killed numerous pilots in the past quite unnecessarily —such as instrument panels with sharp, almost knife-like edges; protruding "windows" and knobs which could cause fearful injuries to the face and head even at relatively low impact velocities; controls and columns lacking in load distribution qualities or made of weak construction that allows the outer rim to break away, leaving a menacing post which could pierce the pilot's chest like a spear, etc.

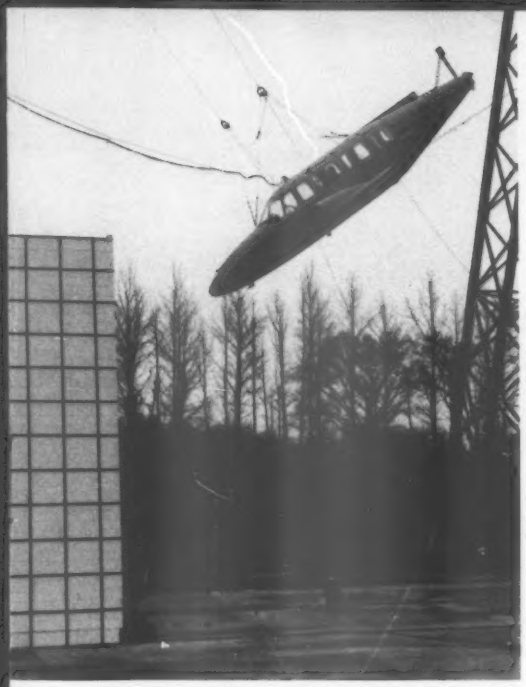
One of these "spear" accidents, cited in Dr. Swearingen's study, occurred to a pilot flying a single-engine airplane constructed in 1947. During aerobatic flight, he pulled up too steeply, stalled and crashed into the ground from a low altitude. He had no shoulder harness, but he was wearing a seatbelt and it held. But the jackknife motion of the pilot's body on impact caused him to pitch forward hitting the wheel. The outer rim broke away, the hub pierced through the pilot's chest, and the wire spoke design



Above—lap-belt/shoulder harness used in military planes and on crew seats of many airliners, has crotch strap as added attach-point and a single buckle for easy use. Harness allows freedom of movement, locks automatically with sharp, strong movement. Below—considerably more restraint is provided by shoulder harness than by seat belt only.







Left—actual aircraft, complete with instrumented dummy, being dropped from 350-foot tower in controlled crash during tests at Langley Research Center. Above—after the crash.

of the hub opened up within the pilot's chest cavity like an umbrella, killing him instantly. The cabin had remained intact, and the only other injuries on the dead pilot's body were some minor face lacerations. The deceleration rate on impact was estimated as 12 to 15 G's, a figure considered well within the limits of survivability.

Crashworthiness can also take the form of stronger cabin structures for general aviation airplanes. Some aircraft now have a heavy keel forward of the cabin which absorbs energy in a crash in certain attitudes. Other new safety features include reinforced channel sections surrounding the cabin; a safety type control shaft which distributes the load of impact so that the wheel does not snap off; the installation of seatbelts and shoulder harnesses which are attached to the basic structure of the airplane. Recessing panel instruments and the use of protective padding can obviously save lives without adding weight to the aircraft.

To further encourage this type of safety design FAA's Flight Standards Service in 1972 instituted a vigorous multi-faceted crashworthiness program. In conjunction with NASA and the general aviation manufacturers, all aspects of occupant survivability in small airplanes are being studied.

Perhaps the most dramatic aspect of this on-going program is the actual crash testing of small single and twin engine airplanes now taking place at the Langley Research Center in Hampton, Va. NASA acquired 31 of these general aviation airplanes after they were slightly waterlogged in a flood, and between February of this year and the end of 1976 they will all be crashed from different attitudes and from different speeds to learn more about crash survival in small airplanes. The testing is part of a NASA research program developed with FAA in consultation with manufacturers.

The purpose of the Langley tests is to define the dynamic load criteria in general aviation accidents, with the possible objective of incorporating such loading criteria into future designs. The dynamic load is the crash impact as measured in actual crash situations. At present airworthiness regulations for type certification express loads in terms of *static conditions*. But a crash involves such factors as velocity, original altitude, angle of impact, roll angle, weather, and most importantly the time-pulse during a crash sequence. Hence, the actual crashing and studying of controlled crashes at Langley.

Measuring Survivability

The tests at Langley use a modification of an old Lunar Module facility. The airplanes are drawn up a 350-foot high tower by supporting cables, and then released at a predetermined altitude and attitude. Inside the airplane are measuring devices to gauge impact and to determine survivability, and perhaps an instrumented dummy. Among the quantities which will be studied are: the deflections and accelerations of the occupants of the seat during a crash; the design of restraint systems; the structural integrity of the cabin; fire safety; and the possibilities of emergency evacuation.

Dynamic load tests have been conducted before by various manufacturers, but never on this scale. Indeed, the individual manufacturer may not have the resources to crash a number of his own airplanes to test for airworthiness. The results of this research will be offered to all general aviation manufacturers to help them in the design of future airplanes.

FAA is also conducting dynamic crash-worthiness tests at two other sites: at the FAA Aeronautical Center's Civil Aeromedical Institute (CAMI) in Oklahoma City; and at NAFEC, the FAA National Aviation Facilities Experimental Center in Atlantic City. The CAMI tests, which are particularly concerned with the medical effects of a crash upon the human body, use a drop tower and a sled to test the impact of objects from 300 pounds to 1,200 pounds at controlled deceleration rates from 5 to 50 G's. CAMI also has a field program which makes on-site investigations of "probably survivable" accidents within Oklahoma and three neighboring states. In the publication "A Summary of Crashworthiness Information for Small Airplanes" FAA has made a compilation of technical information directed toward the manufacturers of general aviation aircraft to help them in planning future designs.

The NAFEC tests, concerned with the severity of impact forces in the deceleration process, employ a catapult and a 300 foot long track. The catapult is able to accelerate objects of up to 6,300 lbs. to speeds of up to 61 mph. There is also an outdoor facility capable of drop testing a 30,000 lb. object from a maximum height of 35 feet. This experimentation will supplement the data derived from crash tests at Langley.

Eventually, as a result of these programs, the general aviation airplane will be built much safer, from the point of view of occupant survivability. But a large measure of responsibility for avoiding injuries in accidents will always remain a human factor. No amount of design engineering will ever relieve the pilot in command of his obligation for the lives entrusted to him.

(The second part of this article, concerned with crash survival behavior of the pilot, will appear in the June issue.)

Over the Hill Airports

A hump on the runway can make it possible for two aircraft to take off simultaneously in opposing directions without seeing each other.

It happened at a small, private single-runway airport at Lake of the Ozarks, Mo. A pilot loading baggage into his airplane happened to raise his head in time to see a *Bonanza,* which had been taxiing out for departure, turn left and head for the south end of the runway. What disturbed the pilot on the ramp was his recollection that another airplane, a light twin, had taxied toward the north end, just a few minutes earlier, and he had not noticed or heard it depart. What heightened his concern was his knowledge that the runway had a pronounced hump in the middle, which made it impossible for aircraft at opposite ends to see each other. There was no UNICOM. In the event of a simultaneous takeoff . . . ?

He saw the *Bonanza* taxi into position for takeoff, apparently oblivious to his frantic jumping up and down and hand signals, so he scrambled into his airplane and switched on the radio.

"Yellow and green *Bonanza,* do not take off, repeat, do not take off, aircraft at other end of runway, over! Yellow and green *Bonanza,* do you read?"

No reply. He tried 122.9, 122.8 and half a dozen other frequencies. Silence. Then his ears were greeted by the roar of the twin's engines as it came in view barrelling over the "hump" and quickly airborne. The *Bonanza,* which had just started its takeoff roll, came to a screeching halt within a hundred yards of the threshold. It was easy to imagine the acceleration of heartbeats in that particular cockpit.

Incidents of this kind, often never reported, are more common than most airmen imagine. There are literally thousands of small airports scattered around the country which began life as a cow pasture or open field conveniently near a town or crossroads, and which have never been graded or levelled. The runways may have been improved with gravel, or paved; edge lights added and various other aids to navigation; but at some of these airports the basic contour remains—perhaps a gentle undulation from one end to the other, perhaps a broad depression or washout in the middle that grows soggy with spring rains, perhaps a rise or two that blocks the view from one threshold to the other. The hundreds of small airports and airstrips that dot the countryside are valuable to aviation both as emergency landing fields and as access ports to air transportation. They generally offer no problem to local pilots who learn their flying in the area, become used to the peculiarities of their field and adjust their technique accordingly.

But what about the itinerant pilot who drops in for a visit out of curiosity, or for fuel, for coffee, or whatever? Who informs him that he will be landing downhill with a 15 percent grade for the first 100 yards? Or that the runway is the bare area to the right of the edge lights, not the grassy area—or vice versa? (Some fields have lights on one side of the runway only.) Or that in calm or crosswind conditions the locals like to take off in one direction and land in another, because of the nursing home over by the woods? Or that in early May cattle graze the runway at night, and you have to be easy with the brakes because of all the droppings?

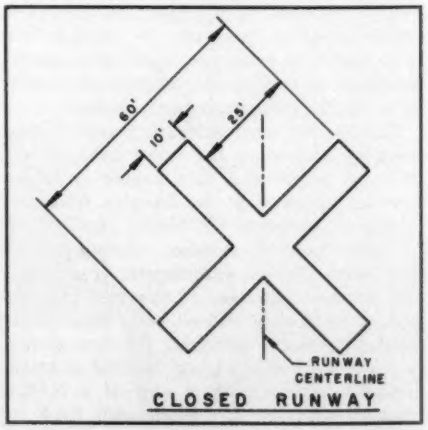
Some of this information (but obviously not all of it) can be found in Parts 2 and 3 of the Airman's Information Manual. Some of it may be posted at the airport, or at the nearest flight service station. Some of it may be dispensed orally at airport cafes or other pilot hangouts. For the rest, the uninitiated pilot has to depend on his own sense of alertness to an unfamiliar situation.

A Bahamas-bound pilot took off from an over-the-hill type of runway in Florida, in a single engine aircraft fully loaded with passengers and vacation gear. The runway length was adequate, and the pilot, a young woman who has since learned better, rolled in what she *thought* was enough forward trim to compensate for the load in the plane. She failed, however, to reckon with the hump in the runway. As her aircraft cleared the midway rise the wheels left the ground and she began flying on the ragged edge of a stall. As the remainder of the runway was downhill and led straight into a clump of woods, the pilot elected to continue the takeoff, lowering the nose to pick up flying speed and praying under her breath. Her technique proved successful in this case and the airplane cleared the trees with only a light flick of leaves against the gear but no one in the cabin spoke for the next ten minutes. This particular pilot had learned something about flying from an over-the-hill airstrip that she would never forget.

In southern Appalachia an airport manager neglects to mark a runway (being resurfaced) with the appropriate (lighted at night) yellow cross on the thresholds. An itinerant pilot, experiencing radio failure on a night flight, sees the airport's rotating beacon, assumes the airport is functioning normally, decides to play it safe and land. He manages to miss the grader, trucks and other heavy equipment on the runway but smashes up his landing gear on a slagpile and groundloops. He walks away from the wreck but the airplane will never fly again.

The National Transportation Safety Board lists 90 accidents in which poorly maintained runways have been given as the probable cause or contributing factor to general aviation accidents over the past five years but this is not the whole story. Hundreds of additional accidents, with minor damage, go unreported, as well as many incidents or near-misses. It is important to understand that most of the airports in this country are privately owned, and if the owner wishes to fatten pigs on the same grass he taxis on he is likely to do so.

The X that marks the spot of a closed runway must be conspicuous from the air. Recommended marking specifications are below.



Watch closely: on an up-and-down-hill airstrip such as the one in the series of photos above, takeoff run is well under way before the airplane becomes visible from the opposite end of the field. With calm, variable, or crosswinds, both ends of the runway could be "active."

When informed that an airport is closed, either permanently or temporarily for repairs, FAA will publish a NOTAM (Notice to Airmen) in the Airman's Information Manual, so that pilots who consult the Manual regularly will be informed of these changes. Flight service stations also receive daily listings of known airport closures. However, an airport manager may decide to keep his airport open while runways repairs are taking place and not bother to notify the agency. It is never safe to assume that because an airport is not NOTAM-ed as closed, or because there are no prominent crosses marked on runway ends (and illuminated at night), that it is fully operational. *The pilot himself is responsible for observing that the conditions for landing are favorable,* before he commits himself and his passengers. This is especially important after sundown.

The fact that a rotating beacon is visible does not in itself convey the message that unobstructed runways are available. The beacon may be left on even when the airport is officially closed, since it provides potentially useful information to the itinerant VFR pilot and for helicopter operations. Conversely, at other airports, lights including runway lights, may be left dark during idle periods currently as a means of conserving energy. A radio call to UNICOM or a previous telephone message to the airport can arrange for the lights to be turned on before your arrival.

The pilot, as noted earlier, is also responsible for avoiding any local obstructions, such as electric wires, poles or trees. UNICOM may help, but no one is obliged to stand by at all hours to warn the unsuspecting pilot of these hazards, which figure prominently in landing accidents.

Recently a veteran pilot flew from the Baltimore area to Florida to pick up his son and bring him home for his spring holiday. The owner of the aircraft, a *Navion,* was also on board. It was after sundown when they approached their destination airport, a single paved strip 2,800 feet long, nestled in rolling farmland and woods. Winds were reported gusting up to 40 knots. A thousand feet from the runway threshold they struck a treetop, cartwheeled over and struck the ground inverted. The airplane burned. Father, son, and friend were found dead in the cabin.

The absence of Federal regulation at most small airports does not mean that the owner is free of any responsibility involving accidents. About one half of the states have airport licensing laws. Also, state or local regulation may require the airport to conform with FAA recommended practices for safe operation, and failure to conform can mean financial liability. For example, FAA's advisory circular on marking of paved areas on airports provides for standard markings with which all airmen should be familiar.

Included is the recommendation that when a runway or taxiway is closed it should be marked with prominent crosses near the ends and at 1,000 foot intervals. (Although yellow is now standard, white is sometimes used.) The crosses should be constructed of solid material, such as wood, not merely painted on the surface. (A cross over the numbers indicates a temporarily closed area.) The marking should be outlined with lanterns or flares at night. All other field lights should be extinguished, with the exception of the beacon light. The latter may be turned off if the airport is closed permanently, but the regional FAA Director should be notified in advance.

Damaged or hazardous areas of runways still in use should be outlined with red flags by day, and red lights by night. Complete details on recommended airport surface markings are found in FAA Advisory Circular 150/5340-1D, available free on request to DOT/FAA Distribution Unit, Publication and Forms Section, TAD-443.1, Washington, D.C. 20590.

Springtime is the period when the ravages of winter show up most prominently on runways, particularly at the smaller airports, and a regular "spring clean-up and patch-up" program has to be undertaken if the process of deterioration is to be avoided. Pilots who feel that their local airport has developed potentially unsafe conditions should call them to the attention of the airport owner.

If that fails to bring action, the nearest FAA accident prevention specialist should be notified. Often a visit from the APS provides the impetus needed to get a long-delayed but much needed improvement program under way. Most airport owners are fully aware of the importance of keeping runways in good repair and will do everything they can to accommodate pilots.

In the meantime, caution is the watchword for pilots. The time to spot potholes or construction equipment is when you are still in the air, not when you are rolling on a runway which may be sloped in such a manner that you cannot see the grader until you reach the high ground. If there is any doubt in your mind about your ability to land safely at an airport, move on to the next one. Aviation safety is often a matter of not being afraid to say No, thank you. Not for me.

The best pilots do it.

Happy landing, at journey's end, is no accident.

A privately owned airport may be designated as "personal" (exclusive use by the owner), or "private use" (only persons authorized by the owner) or it may be opened to public use.

Everybody—or nearly everybody—knows that a pilot with only a student certificate is not permitted to take passengers when he goes flying. Still, the record books continue to be loaded with accidents that happened while students were carrying people in their airplanes. The records also show that when a student with passengers aboard has an accident, it is apt to be very serious. In fact it is *twice as likely to be a fatal accident* as it would be if it happened to a licensed pilot.

In 1973 the national ratio of fatal accidents to total accidents for all pilots was one out of six, but for students with passengers on board it was one out of every three. Many of these fatal accidents have more than one passenger along, too—sometimes in airplanes that were not meant to carry more than two people. Take an accident that happened last summer in South Carolina . . .

Around 9:15 P.M.—late twilight—a woman heard an airplane flying low over her house. ("Low," she said, "like the airplanes that spray for mosquito control.") A few minutes later there was a crash, so loud that it woke her husband. He went out and looked around, but found nothing. It was not until the next morning that the wreckage was located by a Civil Air Patrol search plane. The three occupants were dead. Federal investigators moved in to find out what had caused the crash. As it turned out there were several causes.

One of the first facts they discovered was that the pilot was a student, who had neither the legal right nor the proven skill to pilot a plane carrying passengers. Another very pertinent fact was that the three men had been flying in a Cessna 150, which did not have a third seat. One of the passengers was apparently riding in the baggage area. Given the generous weight allowance of this sturdy, if small, plane such an unorthodox arrangement would not necessarily have made the aircraft overweight—or even out of balance, depending on the exact fuel remaining and the positions of the two passengers (which could not be determined). But it could certainly have changed the handling characteristics of the airplane, with serious consequences for an inexperienced pilot who was used to flying alone. Most light trainers are affected very noticeably by the addition of weight in the cockpit.

A second factor came to light with the toxicology test results. A high alcohol content was found in the blood of all three men, and in the pilot and one passenger there was a drug of the type used for sleeping pills or "downers," which could cause a depressed state, impairment of judgment and decreased inhibitions. Either the alcohol or drug would have affected the ability to safely pilot an aircraft; in combination they could be—in this case *were*—fatal.

The flying history of the pilot was revealing, although incomplete. Records indicated he had applied for his second student certificate in January, 1973—about the time he bought the airplane. At that time he declared nine hours total time logged, with no flying in the previous six months. The instructor who had given him 4.4 hours of dual in January of 1972 and signed him off for solo in a *Cherokee* 140 also flew 1.2 hours with him in the 150 and signed him off to solo in that aircraft. Those 5.6 hours of instruction were all that the records showed.

Official National Transportation Safety Board findings of the probable causes of the accident listed continuing flight into conditions beyond his experience and ability; physical impairment with alcohol and drugs, and unwarranted low flying. Although admittedly extreme, this case exhibits the many factors that may be present when student pilots carry passengers illegally—minimal flying experience, ignorance of the dangers of drugs and alcohol, unfamiliarity with weight and balance problems, etc.

Celebrating Solo

A less extreme, but perhaps more common, example of this type of accident involved another student who had bought one-fourth of a Cessna 172 and, in realization of a longstanding dream, had begun his flight training. The night after he soloed, he gathered with some friends to celebrate his achievement. Round after round of drinks were offered up to his success, and toasts to "the greatest pilot in the world" became more believable with each round. When one of the girls in the group issued a challenge to "prove it", he headed merrily to the airport with the girl in hand.

Fortunately, he never managed to get the airplane off the ground. He lost control while taxiing, crashed into several airplanes parked on the ramp, and virtually destroyed his own aircraft—but neither he nor his passenger were hurt. The cost of the aborted joyride: revocation of his certificate for a year, charges of several hundred dollars in airplane repairs for the "deductable" part of the insurance, and a black mark on his record. (He was fortunate in one respect; his liability insurance took care of the other airplanes. Fine print in some policies might not have done so, since the pilot was operating in violation of the FARs.) Very possibly this young pilot and his friend were saved from a fatal accident by the mishap.

The accident *rate* of students flying with passengers is impossible to determine since there is no way of knowing exactly how widespread the practice is. The only figures are for those who get in trouble—get caught and have violations filed against them, or have accidents.

Aside from a lack of experience and demonstrated pilot skill, there are several unique elements involved in student-with-passenger accidents; one or more of them

contribute to almost every one of these crashes:

Tension. Uneasiness is prevalent; the student knows he is flying illegally, and usually realizes that if he gets caught his certificate is at stake. In most cases a student charged with carrying passengers has his license revoked for a year. Following revocation, the pilot must start his flying career over; in a suspension the certificate is returned at the end of the period and the pilot goes on from there.

Showoff tendencies. The exhilaration of having soloed occasionally triggers in the student an uncontrollable impulse to demonstrate his skill, and this is often intensified by alcohol. The student may be convinced he can out-perform the "Blue Angels" as he buzzes his girlfriend's house, shakes up the sunbathers on the beach, makes tight turns, etc., for the amazement of his captive audience—his passenger.

Unaccustomed diversions. The student who has previously flown only alone or with an instructor may find the presence of passengers far more distracting than he expected. At a stage in his budding pilot career when his full attention is required just to operate the controls, monitor the gauges, navigate and perhaps use the radio, a relatively small complication can provide a major emergency. Answering questions about the flight, pointing out landmarks,

comforting a sick or frightened passenger is part of the game for a seasoned pilot, but it could easily prove too much for the student, who is trying to remember all he has recently been taught.

Weight and Balance. The student pilot, who has never flown with people in the back seat, is totally unprepared for the difference in the feel of the airplane. He may not realize that some four-place planes are actually overweight and/or out of balance with full gas, full seats and baggage. Often the theories of weight and balance are not well understood until late in the student period (just before the time for the check-ride). It may come as a complete surprise that a bag of golf clubs in the baggage compartment can throw some airplanes' weight and balance out of kilter so that stall speeds change and trim settings are unfamiliar—or even inadequate.

Unfamiliar landing areas and terrain. The student pilot on a joyride is apt to use a new, or out-of-the-way airport, perhaps to escape detection of his mission. Complicating his operation may be a different type of runway and approach, different terrain in the form of hills, cliffs, trees or other obstructions. A student who takes his friends to a mountain airport on a summer day is in for a real surprise if he encounters density altitude problems for the first time, with no previous information on the subject!

Weather—and pride. The ability to quit when things get rough is not always easy to learn, especially if one is demonstrating his newly acquired prowess to friends. The lifesaving 180 degree turn in the face of deteriorating weather may appear to be a sign of weakness or cowardice, instead of common sense.

The passenger-carrying student is risking financial, as well as personal loss. His insurance almost certainly does not cover passengers, and depending on how it is written it may not cover much of anything during an illegal operation. A whopping lawsuit could wipe him out economically for the rest of his life—a high price to pay for an impulsive joyride. The incident will also leave a blemish on his record, which may be considered in the future, for instance, when he applies for insurance, flying club memberships, partnerships and the like.

The operator or flight school who rents an airplane to a student who ends up carrying passengers, becomes—perhaps innocently—a kind of partner in crime. Even if his insurance covers replacing the aircraft, the loss of revenue while it is being repaired or replaced is no small consideration. Most often, however, the student who is flying passengers is the owner, or part-owner, of his aircraft, which makes the problem more difficult to combat.

If you are a licensed pilot, is it against the rules for you to go along with a student on a flight? As a passenger yes. Because a student is prohibited by regulation from serving as pilot-in-command of an aircraft carrying passengers. If you, as the certificate-holder, agree to be the "pilot-in-command" (regardless of who sits in the left seat) be sure that you are qualified to serve in that capacity—i.e. that you are rated and current in the aircraft. A single-engine/land pilot should not be riding in the right seat of a twin with a student at the controls. (Yes, some people *do* learn to fly in twins.)

A simple guideline is this: *Unless you are qualified to carry passengers in the airplane involved, do not go along while a student flies the plane.*

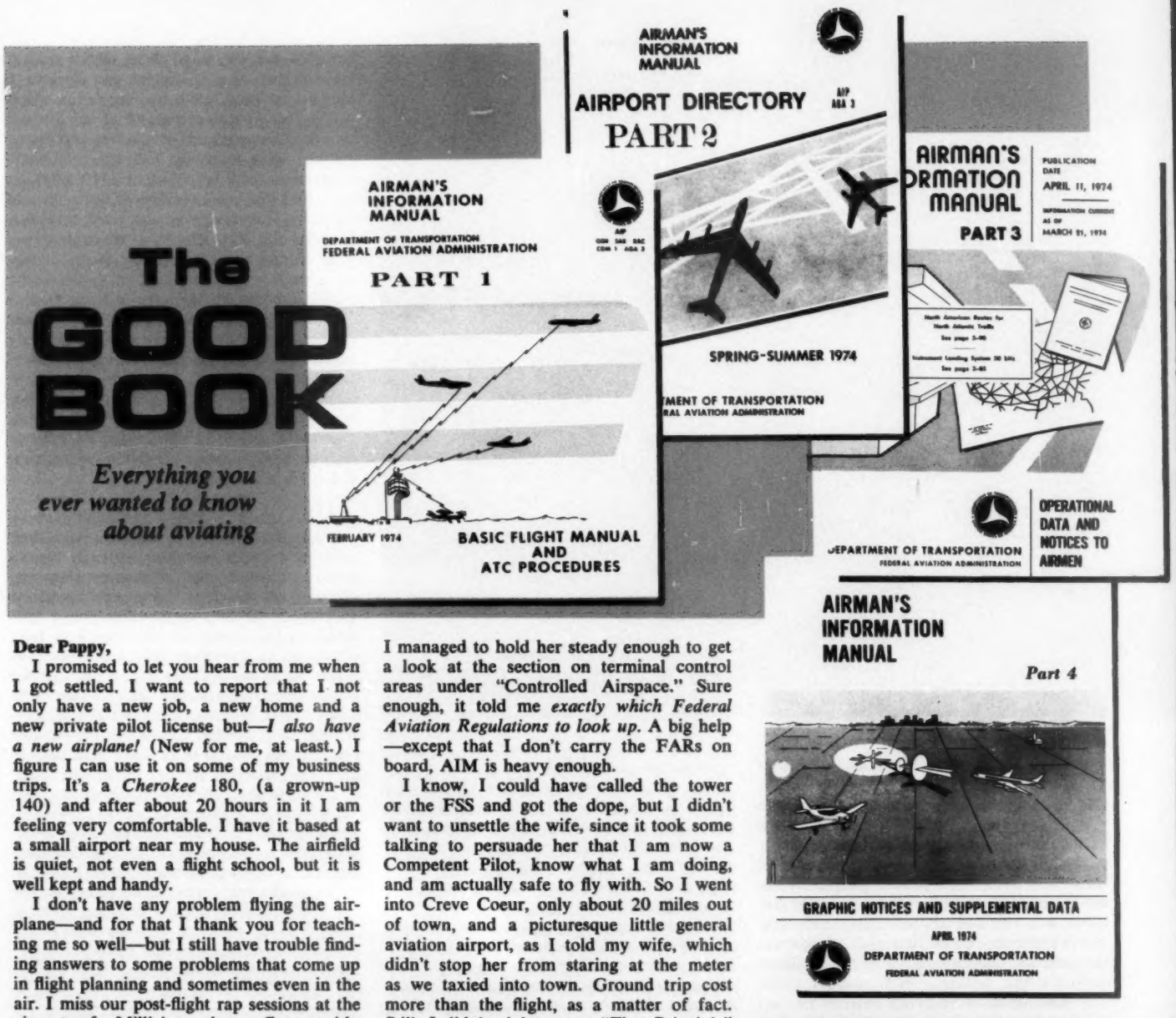
The student who flies with a qualified licensed pilot in the plane must realize, also, that the time can not be logged by the student to apply against his minimum requirements for a certificate.

Resisting Revocation

Every year dozens of students have their pilot certificates revoked (usually for a year). Some of the arguments they use when their hearings come up would do credit to a scenario writer. One young man who was observed to pick up, and later discharge, two teenage girls and a boy, admitted to flying with the group, but claimed that the male passenger was in fact a licensed pilot, and was therefore the pilot-in-command of the flight. However, he pleaded that he was unable to produce said passenger/pilot because "he was a married man," and admitting to such social activities would jeopardize his domestic relationship. Touching concern, but license revoked. An evangelist pleaded that revoking his student permit would endanger the morale of his flock, as he needed his aircraft to keep their spirits up. Still another student claimed that he never actually took off with the young lady who was seen boarding his aircraft; he just taxied around, and let her out before take-off. The lady vanished, but the penalty stood.

Generally it is not a good idea to interfere with other persons' pleasures, and no one likes to inform on his friends, but when it comes to student pilots carrying passengers, that is another matter. Not only the student but you and everyone else who uses the airspace has a stake in keeping it safe for aviation. If you know of someone who indulges in this practice, for whatever reason, please bring it to the attention of the nearest FAA District Office, by telephone or letter. You can remain entirely anonymous, if you wish.

Even if the eventual outcome is a certificate suspension, you can be certain that you have done someone, including the culprit, a big favor. The old "saw" that a fool who persists in his folly will eventually become wise does not apply to pilots, because they may not live that long. ■



Dear Pappy,

I promised to let you hear from me when I got settled. I want to report that I not only have a new job, a new home and a new private pilot license but—*I also have a new airplane!* (New for me, at least.) I figure I can use it on some of my business trips. It's a *Cherokee* 180, (a grown-up 140) and after about 20 hours in it I am feeling very comfortable. I have it based at a small airport near my house. The airfield is quiet, not even a flight school, but it is well kept and handy.

I don't have any problem flying the airplane—and for that I thank you for teaching me so well—but I still have trouble finding answers to some problems that come up in flight planning and sometimes even in the air. I miss our post-flight rap sessions at the airport cafe, Millie's gearbox coffee notwithstanding. How you would puncture my inflated pilot's ego with all kind of questions and answers I didn't know or had all wrong! *"Never guess! Never, never guess—be sure you have the right information, or turn back and find it,"* you always said. You told me I could always check with the Airman's Information Manual—your "graduation" gift to me, very touching, my name embossed on the holder. You said it had all the answers I'd ever need as a pilot. Well, it sure helps, but maybe I've outgrown it a little.

For instance, Sunday I was flying to St. Louis, and after I got airborne with my good wife alongside I got to wondering if I needed a transponder, as I'd heard St. Louis is a Group II TCA now, and I couldn't remember the regs on that for sure. It was a little bumpy up there at 3,500, but I managed to hold her steady enough to get a look at the section on terminal control areas under "Controlled Airspace." Sure enough, it told me *exactly which Federal Aviation Regulations to look up.* A big help —except that I don't carry the FARs on board, AIM is heavy enough.

I know, I could have called the tower or the FSS and got the dope, but I didn't want to unsettle the wife, since it took some talking to persuade her that I am now a Competent Pilot, know what I am doing, and am actually safe to fly with. So I went into Creve Coeur, only about 20 miles out of town, and a picturesque little general aviation airport, as I told my wife, which didn't stop her from staring at the meter as we taxied into town. Ground trip cost more than the flight, as a matter of fact. Still, I didn't violate your "First Principle" and go barging into the TCA on the strength of a guess or by golly. And I didn't get queasy from all that turbulence, either, as I did the first time you took me up, remember?

Sincerely, your ex-student,
Chuck

Dear UpChuck,

How could I ever forget that first flight of yours?—the aroma lingers on in the airplane.

But it was good to hear from you, and I am glad to know you are continuing to fly, and remembering a few things I hammered into your intelligent but stubborn skull. I suppose by now you have learned that you do not need a transponder to operate VFR in a Group II TCA. Before you enrich any

"Uh, no dear, this isn't St. Louis. But it looks like such a friendly little airport . . ."

more taxi drivers, let me remind you of Pappy's Second Principle, namely: *Always believe your instructor, no matter how smart you are or how dumb he looks.* You could have saved yourself a pile of change by checking the "Services to Pilots" section, Chapter 4, Part I of AIM. And you should have done it on the ground, while you are planning the flight, not upstairs with the boat rocking and the old lady eyeballing your every move.

As to why that particular piece of information is found under "Services to Airmen" rather than under "Controlled Airspace," that belongs to a higher wisdom than you or I have access to. There's a reason for it, believe me! The Book has its own logic for revealing the mysteries of flight, but that doesn't mean it's inscrutable. Just takes a little time getting used to it. Persist.

A while back I was paid by the hour to coach a group of would-be pilots prepping for their written. Every now and then I'd throw a spot question at them, tell them to open their AIM's and find the answer—no guessing. Most of those wise guys would fumble from one page to another, swearing the answer wasn't in the Book. I'd just sit there looking out the window and puffing on my pipe till they all found it. Didn't take them too long to learn where and how to look—once they'd figured out how much of their money was going up in smoke while I was waiting. If you belong to a flying club over there, you might put on a spot quiz like that. Probably impress a lot of people—maybe even the little woman.

Anyway, when are you going to fly on over and show us that new airplane of yours? Don't wait till you rack it up. The coffee has got a little worse, I believe, but the talk is still cheap.

As always,

Pappy

Dear Pappy,

I got your message. Fact is, I've been touting what you call the Good Book so much around the airport here that some of the guys think I get royalties from FAA, or whoever publishes AIM. Just the same, I got hit with a question the other day that cost me a five dollar lunch (on a bet). Pilot I know was flying home after dark one night and he spotted what he thought was an airport rotating beacon—except that instead of alternating green and white flashes it had two quick white flashes, then a green one. I bet him a lunch we could find the answer in Part I, and he gave me five minutes to find it. It looked like a cinch. Rotating beacons are listed right where they should be in the Table of Contents, page 1-17, under Airport Lighting. Seven different color combinations, but no white-white-green. What was I to say?

Ex-AIM Salesman,

Chuck

P.S. I hope to be over your way at noon on Sunday. Coffee's on me—I'll bring a thermos from home.

Dear Chuck,

Say nothing but keep on reading. You just aren't a believer yet, Chuckie boy, or you need a course for slow readers. You should be able to peruse that whole page on Airport Lighting under five minutes easy, and if you did you'd have found the dope you wanted (under Military Airports, bottom right hand corner). Why couldn't it have simply been listed in the color table with the others? 'Cause this is not a simple book, friend, so don't look for simple explanations. It's deep.

I was around the airport till two p.m. on Sunday but you didn't show. Heard there was some turbulence over St. Louis way, so I guess you cancelled.

Pappy

Dear Pappy,

Some turbulence is right. "Moderate, intermittent" was what some joker called it in a pilot report but it threw us all over the sky, once we got above 3,000 feet, and it never did seem to let up long enough for me to plot a course around it. My young son, aged 10, up for his first cruise and an afternoon of togetherness with Dad, kept asking me if we were having fun, and why I looked so green? I finally high-tailed it for home and an afternoon of bowling. Why can't they tell it like it is? If that was moderate turbulence, I'd like to know what "severe" or "extreme" is.

Sorry we missed seeing you,

Chuck

Dear Son of UpChuck,

I am writing to you, instead of your father, because you sound like a sensible kid with an uncluttered mind, which is rare amongst your elders. Place, eleven inches from the nose of your Competent Pilot Parent, page 1-88 of AIM, Part I, which consists mostly of a Turbulence Reporting Criteria Table. Point, carefully, to the definition of "intermittent"—"1/3 to 2/3," which can mean most of the time. Explain, patiently, that turbulence is experienced according to the kind of airplane you are sitting in, and that what is reported as "moderate" by a jet jockey can seem like a hurricane to someone in a Cub. Comfort him with the thought that if the turbulence had been "severe" or "extreme", he would probably have lost the airplane, or some of its parts, and missed the bowling, as well as your graduation. Encourage him to listen to and file pilot reports, and to understand that the Weather Service cannot fly along in front of him and tell him exactly what's up ahead. It is probably too late for him but perhaps it may do you some good to memorize Pappy's Third Principle:

Don't blame some other guy for the mud in your eye.

Welcome to the club,

Pappy

Dear Mr. Flying Instructor,

My father paid you $1,000 (my mother said) to teach him all about flying. He pays me fifty cents a week. You tell him.

Respectfully,

Charles Willard Wilson III

(Continued on page 12)

Dear Charles the Second,

Some kind of bright little kid you've got there. Not the most endearing personality in the world, but I'll bet he'll never take any wooden nickels. Like to give him his first flying lesson when his time comes, assuming mine don't come first.

Maybe you'd better leave your family home when you fly, till you get a few things sorted out.

Pappy

Chuck,

Haven't heard from you in a month or more. Hope everything is okay. Listen, we've got a one-day seminar on IFR flying coming up next Saturday. You interested?

Pappy

Dear Pappy,

Negative. I'm not flying much anymore. In fact, if you know anyone interested in buying my 180, have him give me a buzz.

Chuck

Dear Chuck,

What happened? You bust something? Learn from it, man, don't run from it. You may have a few rocks in your head, but you've got flying in your blood. Get with it!

Pappy

Dear Pappy,

No, I didn't bust anything, but I sure scared myself half to death. Typical pilot's nightmare—there I was face to face with another airplane about to turn on final from a right base, as I turned from my left base. I could practically count the rivets on her cowling! I banked practically vertical to get away, heard the stall horn blaring like mad (about that time I rembered to firewall the throttle), skimmed over the trees and just managed to pull out of it, with about six inches between me and Glory. The other plane, full of people, got down okay too, somehow, and we met on the ramp. Before I could chew the pilot out, he lit into me spouting blood (verbally). Something told me right away I was in the wrong. And I was.

Sure, I'd seen that amber flashing light on the airport building. Amber means caution, I figured (*guessed*, you'd say). Cautious I was, looking over the runway as I approached, and of course forgetting all about that little sentence in Part I that tells you the signals for righthand patterns. You can imagine how I felt, standing there in front of that guy's whole family while he told me what he thought of ignoramuses who fly airplanes without knowing what they are doing. I'll *never* learn. I should burn my ticket.

Charles the Stupid

Dear Chastened Chuck,

The time has come (the Old Instructor said) to get serious about flying. I told you not to guess (First Principle), but maybe you had to have a little scare before you'd believe me. You were luckier than some, at that. Now you'd better decide whether flying means enough to you to turn honest, stop guessing, and start learning because, Brother, if you fly on luck instead of proper procedures, sooner or later you run out of luck, and that's when they start building you a box.

Night flyers need to know that a flashing white-white-and-green beacon means there may be big birds in the area. Color chart in AIM gives meanings of other light combinations.

Like I said, everything you need to know is in AIM, and you got the book in your flight bag, but you ain't using it. Chances are, you still don't know how to find what you need when you want it, so you *guess*, and figure you'll look it up later, maybe in the hospital. I'm going to give you (my last donation, Buster) my five Helpful Hints to the five chapters of Part I, and if that doesn't work, then Hell, yes, turn in your ticket.

Chapter 1 is a glossary of aeronautical terms. Not much plot or sex in it, but stuff you need to know about. Smart Alecks skip it—don't. Don't try to wade through the whole section at one sitting, either. Chew off a piece at a time, and get Charles the Third to check you on the definitions. Well—would you rather be embarrassed in the safety and comfort of your living room, or harrassed by interceptor jets at 10,000 feet because you didn't know the difference between an ADIZ and a DEWIZ?

Chapter 2, *Navigation Aids*, is about man-made devices to tell you where you are, if you don't know. First half is about radio aids, second half is mostly about lights at airports. Not the whole story—only about what these devices are and how they work. How *you* work *them* comes later. (Chapter 4).

Chapter 3, *Airspace*, is a kind of three dimensional map of the air. It shows you how the experts of the Air Traffic Service have divided up the sky so that airplanes of all sizes and speeds can pass through it without bumping into each other. It all makes sense, but unless you have three-dimension vision, it doesn't come easy. It helps me to have a three-D model in front of me when I teach it. If you are still flying VFR only, the big thing for you to know is where and when you can go—safe and legal. Some people think uncontrolled airspace is for VFR, and controlled airspace for IFR. Boy, do they get surprised. It ain't that simple. Get some charts and a blackboard and plot it all out.

Chapter 4, *Air Traffic Control*, is pretty much of a "What to do" and "How to do it" section. Also tells you what kind of help you can get from the System, and where and when. How to use the radio, radar, get clearances, file flight plans, get emergency help, fly in Canada, cross the border (legal), etc. Lots of VFR pilots think air traffic control doesn't help them, but it does, really. Here is where you find out.

Safety of Flight is what they call Chapter 5, which is a catch-all for everything else they could think of putting in the book but didn't know where. It tells you how to get and understand weather reports, it gives you the airman's Dr. Spock, it tells you how to avoid hitting birds, how to avoid getting jet-blasted off the ground, plus a whole storehouse full of miscellaneous flying lore and Good Operating Practices. It answers every question you could ever think of firing at the Old Flying Instructor. And it gets updated every three months, which is more than some of us do.

There it is. Use it or weep—or don't fly airplanes.

Good luck,

Pappy

Dear Pappy,

Sorry you went to all that trouble to analyze the Good Book, because by the time your letter arrived I had already mastered it. No fooling, I am now just about the fastest man in the midwest when it comes to quoting chapter and verse in Part I, and I can settle arguments in the pilots' shack faster than a weight-lifter on the beach.

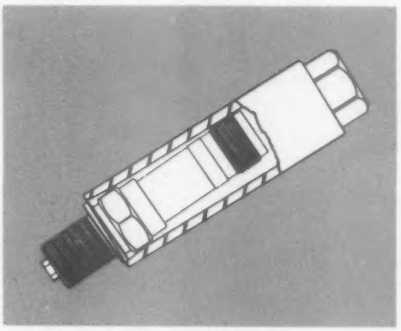
It all began with my wife's cookbook, which is bigger than an encyclopedia. I always wondered how she was able to flip to a favorite recipe the minute any neighbor called her on the phone, and I discovered her secret the other day; she has all the key recipes tab-indexed and color coded—pink for desserts, green for salads, red for meat, yellow for cooked vegetables, etc. Great idea, I thought, and why not apply it to AIM? I just don't happen to be a retentive reader, and I'll bet you most pilots aren't, especially in the evening, after a heavy dinner, long hard day, roomful of kids and distraction from TV coming at you.

So I got busy with the index tabs, scissors, crayon and glue, and before a week was out I had every key item I'm likely to need in Part I tab-indexed and color coded too, so that I could flip the book open with one hand easily while doing my flight planning on a chart. Of course, I'm still studying the Book whenever I get a chance, and learning something new every day, but having a "handle" on what I've been over really gives me the old confidence.

No more guessing! It's made an honest pilot out of me, Pappy, a believer out of my wife, and rich kid out of Charles the Third, as he got paid for doing much of the cut and paste work. He will also help on the quarterly updates—I just hope he hasn't heard about the new minimum wage law.

Your ever-learning student,
Super Pilot

■ THE SOCKET SHOULD MATCH THE JOB. Spark plugs have been damaged by the use of worn or improper tools. Only six-point spark plug socket wrenches should be used for installation and removal of spark plugs; twelve-point deep wrenches or wornout sockets may contact and damage the shielding attachment threads. Also, side pressure exerted on the shielding barrel can crack the insulator, causing the plug to misfire.



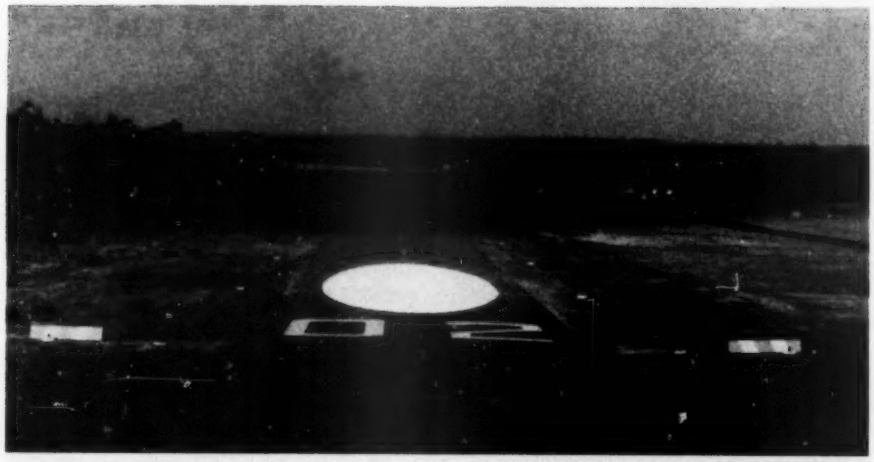
■ PILOTS WITH GOOD INTENTIONS could find themselves doing more harm than good when they fly "mercy flights" without medical sanction. Sick persons with physical disabilities that involve oxygen deficiency, gas expansion or dysbarism ("bends"), if flown in nonpressurized aircraft particularly at altitudes above 8,000 feet MSL, could develop severe or fatal complications. Best let a doctor be the judge.

■ PILOTS ARE UP. FAA's recently released U.S. Civil Airmen Statistics for 1972 shows a total of 750,869 active pilots in the nation at the close of that year. This was a one percent increase from 1971. Of that number there were 321,413 private pilots, 196,228 commercial, and 37,714 airline transport-rated pilots. The remainder included helicopter, glider, student and others. Total pilot count is expected to top one million by 1979. The report may be obtained by writing FAA's Office of Management Systems, AMS-220, 800 Independence Ave., Washington, D.C. 20591.

■ HOT LINE. More than one aircraft fire has been started because engine bonding straps were not properly replaced after the engine had been removed, repaired and replaced. In many engines, when the bonding straps are missing, the primer line copper tubing can act as a conductor for return current from the starter ground side, back to the battery. Unable to carry the heavy current required by the starter, the copper tubing may melt and allow raw fuel to spill out.

■ CLOSED DOOR POLICY. Pilots should always personally lock aircraft doors before takeoff, even if this requires loosening a seatbelt and leaning across the front-seat passenger. Having a door come open after the plane is airborne can result in losing control of the aircraft, while attempting to latch the door in flight. In many aircraft (particularly those with low wings) the noise of an open door can be extremely frightening to passengers. The "Doors closed and locked" item on the pre-takeoff checklist should not be relegated to a passenger, who may be completely unfamiliar with the latch system.

■ HOSE WATCHING. Aircraft operators are cautioned to watch for signs of failure of braided or asbestos covered hoses that carry inflammable fluids. These should be inspected each 100 hours of operation and those that show evidence of leakage or stiffness should be shown to a qualified mechanic for possible replacement. Special attention should be directed to those hoses in a hot environment such as around turbo components.



SHAPE OF THE OVAL on the runway tells the pilot whether he is on the proper approach path for landing, in this experimental visual aid. If the oval appears round, the plane is approaching at or near the proper angle; if elongated, it is high; if it appears flattened, the plane is low. Other designs being tried use a diamond, and a pair of rectangles. Tests were conducted at FAA National Aviation Facilities Experimental Center at Atlantic City.

FAA Proposes Six-Month Transponder Deadline Extension

The July 1, 1974, deadline for required use of the 4096-code transponder with altitude encoder for aircraft operating in Terminal Control Areas would be postponed for six months under a current FAA proposal. New deadline dates for such equipment would be January 1, 1975, for Group I TCAs and July 1, 1975, for Group II and III TCAs. The date for required use of the equipment in controlled airspace above 12,500 ft. MSL would remain July 1, 1975.

The proposed change is due to an equipment supply problem. Comments on this proposal, Notice 74-17, must be submitted to FAA, AGC-24, Washington, D.C. 20591, before May 17, 1974.

Aviation Review Conference Scheduled for June 3-5

The annual FAA Aviation Review Conference will be held June 3-5 at the Washington Hilton Hotel in Washington, D.C. Formerly known as the "Planning Review Conference," the 1974 meeting incorporates a number of format changes, and has been supplemented with four consultative planning conferences on specific subjects as well as a series of "listening sessions" held throughout the year.

Publication of the 1974 edition of the FAA National Aviation System Ten Year Plan and Policy Summary has been shifted to the Fall of this year. An interim summary of NAS plans, entitled "The Year Ahead—1975," will be published prior to the June Conference to serve as a basis for discussion and as a transition document pending publication of the NAS Ten Year Plan.

TCA Speed Limit Rule Clarified

An FAA proposal would clarify the wording of the regulations limiting airspeeds beneath a Terminal Control Area (TCA). The proposal would make it clear that all of the airspace underlying a TCA, and airspace within any VFR corridors that pass through a TCA, would be subject to the 200-knot speed limit in effect at TCAs. Adoption of the proposal would not result in any substantial rule change.

The proposal would amend FAR 91.70(c) of Part 91. Some confusion has resulted from a previous amendment which prescribes rules for segregation, separation and control of aircraft within TCA's.

STOLEN OR MISSING AIRCRAFT

American A2A	N9798M	Poughkeepsie
Beech 65A	N297GB	Dallas
Cessna 172	N3011U	Albany, N.Y.
Cessna 182	N20790	Kansas City
Cessna 210	N2268R	Thermal, Cal.
Cessna 210	N3708Y	Albuquerque
Cessna 210	N3808Y	Wash., D.C.
Cessna 210	N3884Y	Ontario, Cal.
Cessna 310	N3092D	Oakland, Cal.
Piper PA-18	N7563P	Pine Bluff, Ark.
Piper PA-28	N6542J	Ontario, Cal.
Piper PA-32	N8919N	Yuma
Piper PA-32	N40959	Vero Beach

If you have information on any of the above advise the nearest FSS.

Control Zone VFR Rule Modified

Rules affecting VFR flight within airport control zones have been liberalized by the adoption of an amendment to Federal Aviation Regulations Part 91.107. In the past if the reported cloud ceiling was less than 1,000 feet above the surface of the primary airport, pilots could not conduct a VFR flight anywhere within the control zone, even though they were in an area where VFR conditions existed. Under the new rule the actual height of the clouds where the pilot is operating determines whether he can fly under VFR rules. The amendment in no way affects other basic VFR weather minimums in a control zone.

Airport "Movement Area" Defined

An FAA proposal would more clearly describe when an ATC clearance is required to taxi an aircraft. The term "movement area" would include all areas of an airport used for taxiing, takeoff, and landing of aircraft, except for loading ramps and parking areas. FAR 91.87 presently provides that at a controlled airport a pilot needs an ATC clearance to takeoff, land or taxi on a runway, but is silent regarding taxi clearances. A clearance to "taxi to" a runway would continue to be a clearance to cross all intersecting runways but not a clearance to "taxi on" the assigned runway.

FLIGHT INSTRUCTOR REFRESHER COURSES

DATE	LOCATION	SPONSOR
5/7-9	Sarasota, Fla.	AOPA & Sara.-Bradenton Arpt. Auth.
5/14-16	Albany, New York	N.Y. State DOT
5/14-16	Oklahoma City, Okla.	Okla. State Aero. Comm.
5/21-23	Wichita Falls, Tex.	Texas Aero. Comm.
5/21-23	Charleston, W.V.	AOPA & W.V. Avia. Comm.
6/4-6	Peoria, Ill.	Ill. Dept. of Aero.
6/4-6	Minneapolis, Minn.	AOPA & NAFI
6/11-13	Oakland, Calif.	AOPA & College of Alameta
6/18-20	St. Louis, Missouri	AOPA
6/25-27	San Juan, Puerto Rico	Puerto Rico Ports Auth.
6/25-27	Columbus, Ohio	AOPA & Ohio State Univ.

Please contact sponsor to confirm courses, exact dates, and location.

• Is That You, Nicholas?

The February *FAA Aviation News* just arrived and to my pleasant surprise (if my eyes do not deceive me) the gentleman on the front cover appears to be none other than Mr. Nicholas (Nick) Augustinovich, who operates one of the better aircraft maintenance facilities of the nation at Claremont Municipal Airport in New Hampshire. However, I failed to find any mention of his name. Nick received the regional FAA award as Mechanic of the Year for general aviation for 1971. He is an asset to the industry he serves and sets a fine example for others to follow.

Gordon Bunker
New Hampshire Aeronautics Commission
Concord, N.H.

• Soiled Hands

My normal appreciation for the excellency of *FAA AVIATION NEWS* was considerably altered by the cover of your February issue. After years of coordinated effort with FAA to upgrade the professionalism of our A & P's and enhance their image, I find it very disheartening to see *FAA AVIATION NEWS* portray on its front cover an A & P as a smudged airborne grease monkey. I trust this was a gross oversight and not the actual image held by FAA officials in policy making positions. I offer these comments as an A & P, A.I., pilot and the Director of an Aviation Maintenance Technician School.

Richard J. Fessler
San Antonio, Tex.

The cover photo showed Nick as he sees himself. His comment: "I never saw a good mechanic yet who could keep his hands clean when he worked. Seems to me the only ones with clean hands (and spotless coveralls) are the ones who don't do much."

• Don't Give Up the Ship

Your article on "Cold Weather and Your Electrical System" (November issue, FAA AVIATION NEWS) leaves out an important fact. The alternator *can* charge up a battery even if the engine had to be handpropped, *provided* that the battery has sufficient power to close the battery relay and activate the alternator field. If the alternator is not fed some current to start it off, then it will never start generating power (if it is the normal battery-excited general aviation alternator). I recommend the following procedure:

After the engine has been started (with all electrical loads off), turn on the master switch. With the engine above idle, check the electric power indicator. If the alternator is charging the battery, you will get a positive indication. If you do not get a positive indication immediately, you will never get it, so don't go until you get a serviceable battery installed.

Murry Schoenberger
FAA Eastern Region

Right, and thank you for the assist. The subject is one that has many technical ramifications, mostly outside the scope of the article, but your comments should help round off the discussion in a practical way.

• Practice Areas

I would like to suggest that approved student/aerobatic practice areas appear on sectional charts, not only for the benefit of the solo student but also to help the transient pilot to avoid these areas.

Earle S. Pittman
Boulder, Colo.

There seems to be some confusion about student practice areas. Contrary to what some pilots believe, practice areas are not for the exclusive use of pilot training. Whether you are traversing the area or practicing maneuvers you are responsible for seeing and avoiding other traffic in these areas.

Student practice areas are not established by regulation. Certificated pilot schools may designate practice areas, but this must be done in coordination with local FAA air traffic facilities and with the general aviation district office in the area to assure minimum conflict with other traffic.

• Pattern Altitudes on ATIS

The Automatic Terminal Information Service (ATIS) broadcasts provide much important information to arriving pilots. I would like to have you add traffic pattern altitudes to the ATIS broadcast.

W. V. Williamson, D.D.S., M.S.
Newport Beach, Calif.

We agree that ATIS does provide much important information to pilots but there has to be a limit on the amount that should be placed on it. Otherwise ATIS would become a "catch-all," and defeat the original purpose of reducing radio frequency congestion and controller workload.

There is no universal traffic pattern for airports. At most airports and military bases, traffic pattern altitudes for propeller driven aircraft generally extend from 600 feet to as high as 1,500 feet above the ground. Traffic pattern altitudes for military turbojet aircraft sometimes extend up to 2500 feet above the ground. Pilots of en route aircraft should be constantly on the alert for other aircraft in traffic patterns and avoid these areas whenever possible.

For the transient aircraft flying into a controlled airport the traffic pattern altitude is left to the discretion of the pilot—within reasonable parameters, of course. If you have any doubt at a particular airport as to what your pattern altitude should be, either query the tower or advise them that you will be flying at a specific altitude (between 600 feet and 1,500 feet). If air traffic control has cause to change this altitude they will advise you.

FAA Aviation News welcomes comments from the aviation community. We will reserve this page for an exchange of views. No anonymous letters will be used, but names will be withheld on request.

• That Left-Out Feeling

We were pleased to read the article on the new Public Broadcast System television series, "Aviation Weather." However, our station WCET-TV, CH 48, was somehow omitted from the reference box which listed the stations carrying the series, and we have been carrying "Weather" since its original broadcast. It is shown every Friday at 7 p.m.

Marilyn Kershner
WCET-TV Channel 48
Cincinnati, Ohio

Since the January article a number of additional stations have joined the network for the weather show, bringing the present total to more than 150.

• Weather in Indiana

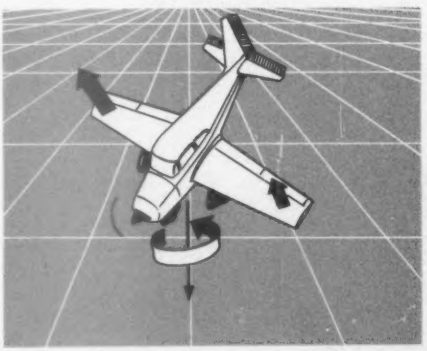
Your article on Public Service television stations carrying aviation weather programs (January 1974) locates station WTIU-TV as carrying this service for the Bloomington, Ill. area. WTIU is located in Bloomington all right, but in the good state of Indiana.

Marilyn Curry
Bloomington, Ind.

• Spin Recovery

In your December article on Spins you say ". . . once the rotation (of the spin) has been halted by opposite rudder." Please don't *say* that. While some airplanes would stop rotating by applying rudder with the elevator control still full back (as it should be in a spin) it is not true in all cases. Some planes, even if they did stop rotating—with elevators full up—would immediately go into a spin in the other direction.

Donald J. Robinett
San Antonio, Tex.



"Halted" was incorrect. FAA's Flight Training Handbook states that ". . . as the rotation slows, the stall is broken by briskly moving the elevator control forward or allowing it to move forward, whichever is necessary in the airplane used."

Our thanks to you, and others who wrote, pointing out the error.

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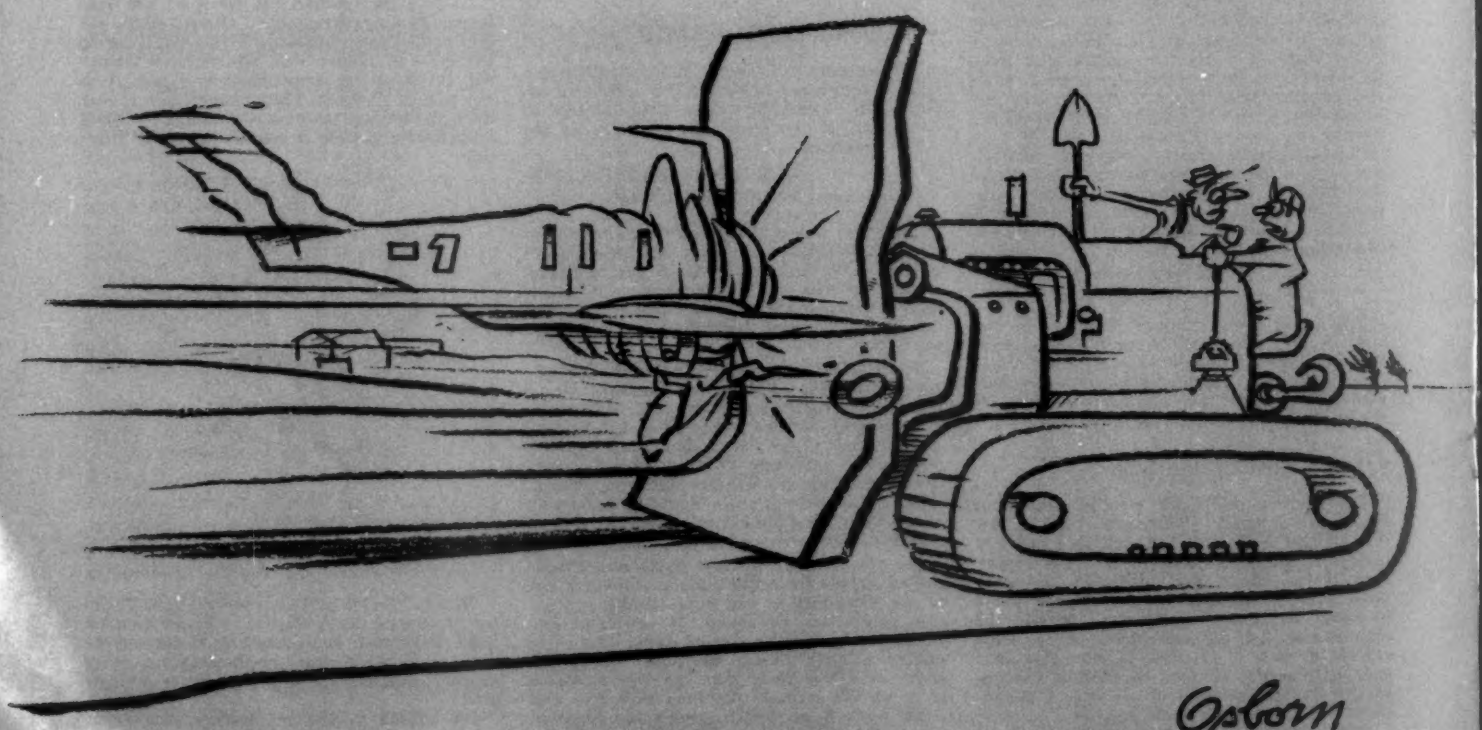

With cats that crawl.

Osborn